

WE CLAIM

1. A cell or tissue collection medium (universal collection medium), wherein the cells or tissue contained in the medium can be analyzed directly by both cytological and molecular methods, wherein the molecular method of analysis comprises either RNA or DNA or protein analysis or the analysis of both RNA and DNA, and wherein the medium is water based and comprises a preservative, a cross-linking agent and an anti-degradation agent.

2. The universal collection medium of claim 1, wherein the medium consists of a volume of less than 10 ml.

3. The universal collection medium of claim 1, wherein the medium consists of a volume of less than about 5 ml.

4. The universal collection medium of claim 1, where in the medium consists of a volume of less than about 2 ml.

5. The universal collection medium of claim 1 wherein the universal collection medium comprises a buffer component, at least one alcohol component, a cross-linking agent and an agent to inhibit degradation of at least one of the group consisting of RNA, DNA and protein.

6. The universal collection medium of claim 5, wherein the buffer component has a buffering capacity within a pH range of about 2.5 to about 6.

7. The universal collection medium of claim 6, wherein the buffer component has a buffering capacity within a pH range of about 3 to about 5.

8. The universal collection medium of claim 7, wherein the buffer component has a buffering capacity within a pH range of about 3.5 to about 4.5.

9. The universal collection medium of claim 5, wherein the alcohol component comprises a C1 to C10 alcohol.

10. The universal collection medium of claim 9, wherein the alcohol component is selected from the group consisting of methanol, ethanol, propanols,

butanols, and pentanols.

11. The universal collection medium of claim 10, wherein the alcohol component comprises ethanol or n-butanol.

12. The universal collection medium of claim 5, wherein the cross-linking agent comprises an aldehyde.

13. The universal collection medium of claim 12, wherein the cross-linking agent is selected from the group consisting of formaldehyde and glutaraldehyde.

14. The universal collection medium of claim 12, wherein the cross-linking agent comprises glutaraldehyde-bisulfite.

15. The universal collection medium of claim 5, wherein the agent to inhibit degradation of at least one of the group consisting of RNA, DNA and protein comprises at least one agent selected from the group consisting of a nuclease inhibitor, a protease inhibitor and a chelating agent.

16. The universal collection medium of claim 15, wherein the agent to inhibit degradation of at least one of the group consisting of RNA, DNA and protein comprises a chelating agent.

17. The universal collection medium of claim 15, wherein the chelating agent is selected from the group consisting of murexide, chromotropic acid, 1-(1-hydroxy-2-naphthylazo-2-hydroxy-5-nitronaphthalene-4-sulphonic acid, EDTA (ethylenediaminetetraacetic acid), *o*-phenanthroline and thiourea.

18. The universal collection medium of claim 12, wherein the chelating agent comprises EDTA (ethylenediaminetetraacetic acid).

19. A method of performing morphological and biochemical analysis on a cell or tissue, wherein the method comprises:

obtaining cells or tissues from a patient;

preserving the cells or tissue in a water-based medium comprising a preservative, a cross-linking agent and an anti-degradation agent;

directly analyzing the morphology of the cells or tissue preserved in the medium; and

directly analyzing either RNA or DNA or protein contained in the cells or tissue preserved in the medium.

20. A universal collection medium comprising water, a preserving agent, a buffer, a cross-linking agent and an agent capable of inhibiting the degradation of at least one of the group consisting of RNA, DNA and protein.

21. An article of manufacture for preserving a cell sample of limited cell number comprising:

a container holding less than 2 ml of the medium according to claim 20; and

a lid fitting said container.

22. The article of manufacture of claim 21 further comprising a cell collecting device having an elongated member wherein a distal end of the elongated member has a non-absorbent increased surface area.

23. The article of manufacture of claim 22 wherein the distal end of the elongated member is a brush.

24. A method of cell sample collection that allows detection of cell morphology and quantitative analysis of at least one of the group consisting of RNA, DNA and protein from a single sample, said method comprising

collecting cells from a patient wherein the cell sample is limited in size; storing collected cells in the medium according to claim 20;

removing an aliquot of cells in the medium for cell morphology analysis; and

removing a second aliquot of cells in the medium for a quantitative

analysis selected from the group consisting of DNA analysis, RNA analysis, protein analysis and carbohydrate analysis.

25. The method of claim 24, wherein the cells are stored in a sample of less than 10 ml.

26. The method of claim 24, wherein the method of claim 24, wherein the cells are stored in a sample of less than about 5 ml.

27. The method of claim 24, wherein the cells are stored in a sample of less than about 2 ml.